

REMARKS/ARGUMENTS

Claim Amendments

The Applicant has amended no claims. Applicant respectfully submits no new matter has been added. Accordingly, claims 1-18 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

The Applicant respectfully reminds the Examiner of the discussion with the Applicant regarding the non-final Office Action filed on May 12, 2009. The Applicant had filed a supplemental response to the previously filed Advisory Action at around the same time the Examiner filed a Non-Final Office Action. The Examiner responded to the supplemental response with a Final Office Action on June 8, 2009. The Applicant was told to ignore the non-Final Office Action and respond only to the Final Office Action.

Response to arguments

The Applicant agrees that the combination of the references should be considered as a whole. The Kao reference is cited as disclosing a plurality of signal sources and modified signals of each signal source are stated as adding a weighting to each of the signals received from a subscriber signal at a plurality of antennas and then adding the weighted signals together to increase signal strength (abstract). Further, the Examiner cites Mesecher as disclosing subtracting a weighting from a received signal. The Examiner appears to conclude that the Kao reference, disclosing the addition of a plurality of signal sources that have been weighted, suggests the combination with Mesecher which discloses subtracting a weighted signal. The Applicant respectfully submits that this is not logical.

Furthermore, the process disclosed by the Applicant teaches iteratively reconstructing a first and second signal (steps c and e) and subtracting the signals until a stop criterion is reached. This process obtains resulting signals that progressively reduces interference from previous signals. Neither Kao, Mesecher nor Walton teach or suggest these elements.

Claim Rejections – 35 U.S.C. § 103 (a)

Claims 1-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kao (US PG-Pub No 2004/0077377) in view of Mesecher, et al. (US Patent No. 6,937,879) and further in view of Walton et al (US Patent No. 7,248,879). The Applicant respectfully traverses the rejection of these claims.

The Applicant respectfully submits that neither the Kao nor the Mesecher reference disclose "a plurality of directionally separated antenna elements" as recited in the preamble. MPEP 2111.02 Effect of Preamble states "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999). The Applicant respectfully submits that the preamble to the independent claims is necessary to give life, meaning and vitality to the claim.

The preamble to claim 1 discloses a radio access unit comprising receiver and antenna means, the antenna means having a plurality of directionally separated antenna elements for adaptively receiving radio communication signals transmitted by a plurality of remote radio communication units.

The preamble discloses the access unit antenna means (singular) elements. The Applicant respectfully submits that neither Kao nor Mesecher nor Walton references disclose the antenna having directionally separated elements.

As previously noted, the present invention discloses and claims a method of interference cancellation in radio communication signals received by a radio access unit of a radio communication system. The present invention receives radio signals from a single antenna that has a plurality of directionally separated antenna elements (para. [0060]). A first radio signal received at the antenna elements, from a first mobile communication unit, is obtained by weighing the signals by first weighing factors. A second radio signal from a second communication unit is obtained by weighing the signals by second weighing factors. The first "weighed" radio signal from the first communication unit is then subtracted from the second "weighed" radio signal to obtain

a corrected second radio signal. This process is iteratively conducted for each received signal, one signal at a time, for further radio communication units.

The Kao reference describes standard beam-forming procedures. The Applicant has noted that Kao is directed to combining signals to increase the strength of a signal received. Claim 1 of the present invention discloses a first signal with an added weighing factor being subtracted from the previous first signal to provide a further, modified signal, which provides better interference cancellation. The Applicant respectfully submits that the Kao reference lacks the teaching of modifying a signal by adding a weighing factor to a signal, then taking that modified signal, adding another weighing factor and subtracting the modified signal from the newly weighted signal.

Mesecher fails to disclose reconstructing the signals in the manner disclosed by the Applicant. As shown in the figures, the Mesecher reference takes interference signals straight from the second antenna and subtracts that from the signals from the first antenna. Mesecher does not reconstruct the interference signal nor does Mesecher apply the antenna coefficients of the first antenna to the interference signal. If, as in Kao and Mesecher, reconstruction is not performed, a received signal at the second antenna can include the original signal. This would then also be subtracted from the signal from the received signal, which is not desired. Mesecher relies on the effect that the second antenna is sufficiently narrow and isolation between original and interfering signal exists. In the Applicant's case, isolation is not required since the interfering signal is reconstructed.

Furthermore, neither Kao nor Mesecher teach or suggest performing the iterative steps of the recited method on each received signal. Kao and Mesecher do not teach or suggest receiving a plurality of signals, and for each received signal, correcting the signal iteratively.

The Walton reference is cited for reconstructing the first and second radio signal. The Applicant agrees that Walton discloses modifying signals. But, the signals that are being modified are signals received by a terminal (applicant's mobile communication unit) from a MIMO antenna (Figure 7 and further in column 23 line 56-column 24, line 58). Again, this is the opposite of the Applicant's claims where a plurality of mobile

communication units transmits to a multi-element antenna. Nor is Walton's subtractive scheme based on ordering different terminals with different power levels as disclosed by the Applicant's invention and the independent claims; i.e., the strongest signal is demodulated first, subtracted from the composite and the second strongest signal is subtracted and so on until the stop criterion is satisfied.

The Walton, Kao and Mesecher references, individually or in combination, fail to teach all the elements of claim 1 and analogous claim 11. And, neither of the references suggest or teach the elements of the independent claims. This being the case the Applicant respectfully requests withdrawal of the rejection of claims 1 and 11.

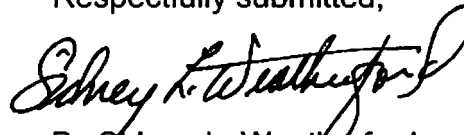
Claims 2-10 and 12-18 depend from claims 1 and 11 and recite further limitations in combination with the novel elements of claims 1 and 11. Therefore, the allowance of claims 1-18 is respectfully requested.

CONCLUSION

In view of the foregoing remarks, the Applicant believes all of the claims currently pending in the Application to be in a condition for allowance. The Applicant, therefore, respectfully requests that the Examiner withdraw all rejections and issue a Notice of Allowance for all pending claims.

The Applicant requests a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Sidney L. Weatherford", written in a cursive style.

By Sidney L. Weatherford
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